

**NORTH CAROLINA DIVISION OF  
AIR QUALITY**

## Application Review

**Issue Date:**

**Region:** Raleigh Regional Office  
**County:** Person  
**NC Facility ID:** 7300029  
**Inspector's Name:** Steven Carr  
**Date of Last Inspection:** 08/23/2016  
**Compliance Code:** 3 / Compliance - inspection

<p align="center"><b>Facility Data</b></p> <p><b>Applicant (Facility's Name):</b> Duke Energy Progress, LLC - Roxboro Steam Electric Plant</p> <p><b>Facility Address:</b>  Duke Energy Progress, LLC - Roxboro Steam Electric Plant  1700 Dunnaway Road  Semora, NC 27343</p> <p><b>SIC:</b> 4911 / Electric Services  <b>NAICS:</b> 221112 / Fossil Fuel Electric Power Generation</p> <p><b>Facility Classification: Before:</b> Title V <b>After:</b> Title V  <b>Fee Classification: Before:</b> Title V <b>After:</b> Title V</p>			<p align="center"><b>Permit Applicability (this application only)</b></p> <p><b>SIP:</b> 15A NCAC 02D .0521, .0536, .0606, .0612, 02Q .0501(d)(1)  <b>NSPS:</b> NA  <b>NESHAP:</b> Subpart UUUUU  <b>PSD:</b> NA  <b>PSD Avoidance:</b> NA  <b>NC Toxics:</b> NA  <b>112(r):</b> NA  <b>Other:</b> NA</p>				
<p align="center"><b>Contact Data</b></p> <table border="1"> <tr> <td> <p align="center"><b>Facility Contact</b></p> <p>Robert Howard  Lead EHS Professional  (336) 598-4077  1700 Dunnaway Road  Semora, NC 27343</p> </td> <td> <p align="center"><b>Authorized Contact</b></p> <p>Jason Haynes  Station Manager  (336) 597-6101  1700 Dunnaway Road  Semora, NC 27343</p> </td> <td> <p align="center"><b>Technical Contact</b></p> <p>Erin Wallace  Sr. Environmental Specialist  (919) 546-6610  PO Box 1551  Raleigh, NC 27602</p> </td> </tr> </table>			<p align="center"><b>Facility Contact</b></p> <p>Robert Howard  Lead EHS Professional  (336) 598-4077  1700 Dunnaway Road  Semora, NC 27343</p>	<p align="center"><b>Authorized Contact</b></p> <p>Jason Haynes  Station Manager  (336) 597-6101  1700 Dunnaway Road  Semora, NC 27343</p>	<p align="center"><b>Technical Contact</b></p> <p>Erin Wallace  Sr. Environmental Specialist  (919) 546-6610  PO Box 1551  Raleigh, NC 27602</p>	<p align="center"><b>Application Data</b></p> <p><b>Application Number:</b> 7300029.15A  <b>Date Received:</b> 02/25/2015  <b>Application Type:</b> Modification  <b>Application Schedule:</b> TV-Significant  <b>Existing Permit Data</b>  <b>Existing Permit Number:</b> 01001/T51  <b>Existing Permit Issue Date:</b> 10/21/2016  <b>Existing Permit Expiration Date:</b> 01/31/2019</p>	
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**Total Actual emissions in TONS/YEAR:**

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2015	10544.03	7120.18	104.26	883.20	528.85	27.12	11.59 [Hydrogen chloride (hydrochlori)]
2014	15647.03	9569.75	148.23	1235.49	731.18	24.00	6.15 [Cyanide & compounds (see also )]
2013	12642.21	10060.78	117.27	26960.69	484.71	17.31	4.93 [Cyanide & compounds (see also )]
2012	13372.01	13064.42	175.62	25999.17	748.65	24.70	7.27 [Cyanide & compounds (see also )]
2011	9335.13	6788.25	149.01	18301.87	645.44	20.85	6.19 [Cyanide & compounds (see also )]

<p><b>Review Engineer:</b> Ed Martin</p> <p><b>Review Engineer's Signature:</b> _____ <b>Date:</b> _____</p> <p><b>DRAFT</b></p>	<p align="center"><b>Comments / Recommendations:</b></p> <p><b>Issue:</b> 01001/T52  <b>Permit Issue Date:</b> _____  <b>Permit Expiration Date:</b> _____</p>
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## **I. Purpose of Application**

The following permit modifications were requested by Duke Energy in this application:

1. Incorporation of MATS Rule Requirements into the Permit

A request to incorporate the requirements of the Maximum Achievable Control Technology (MACT) as promulgated in the most current version of 40 CFR Part 63 Subpart UUUUU, “National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units” (also known as the Mercury And Toxics Standards (MATS rule), which became effective April 16, 2016, for Units 1-4. See Section V.A.

2. Revisions to PM CEMS Conditions - Units 1, 2 and 3

A request to revise the PM continuous emission monitor system (PM CEMS) provisions in the permit for the non-NSPS SIP Units 1, 2 and 3 for compliance with 02D .0521 (opacity) and 02D .0536 (particulate emissions) as discussed in Section V.B below. This is to align these requirements with the Utility Boiler Mercury Air Toxics Standards (MATS) rule, which is also being incorporated into the permit at this time (item 1 above). This does not apply to Unit 4 which is an NSPS Subpart D unit with separate compliance requirements.

3. Use of MATS Method 5 for Stack Testing

A request to use MATS Method 5 to comply with the SIP 02D .0536 PM emission limits for Units 1, 2 and 3 and with the NSPS Subpart D PM emission limits for Unit 4 for stack testing. See Section V.C.

4. Halide Salt Mercury Oxidation Fuel Additives

Duke amended this application in a letter dated August 3, 2015, to request the use of halide salt mercury oxidation fuel additives (or equivalent additives) applied to the incoming coal to reduce mercury emissions in order to comply with the MATS rule emission limits. See Section V.D.

Duke has withdrawn the request to use halide salts in a letter dated June 12, 2017. At the time the application was submitted, Duke had determined that oxidation fuel additives may be needed on a periodic basis to ensure that the mercury is adequately oxidized in the combustion process and captured in the downstream scrubber. Duke originally stated that the MATS mercury emission limits could be met using the current control technologies (i.e. scrubber); however, the oxidation additives would be an “insurance policy” to help ensure compliance with the MATS mercury limits. The halide salts were considered a “trim” technology to control mercury, to be used intermittently on an as-needed basis to ensure compliance. Therefore, Duke states that, since the application was submitted, they have gained additional operational knowledge and data regarding their mercury emissions and, at this time, the Company does not have any plans to pursue application of halide salts as a mitigation strategy.

5. Modification of 02D .0606 – Units 1, 2 and 3

Duke amended the application in a letter dated May 19, 2017, to modify the method to be used as an indication of good operation and maintenance (Good O&M) for the PM CEMS. See Section V.D.

6. NSPS PM Limit Change – Unit 4

Duke amended the application the May 19, 2017 letter, to request the Unit 4 NSPS Subpart D PM limit be changed from 0.10 lb/mmBtu to 0.03 lb/mmBtu. See Section V.E.

This is a significant one-step Title V permit modification pursuant to rule 15A NCAC 02Q .0501(d)(1). In the application, Duke had requested the changes be made as a Minor Modification; however, it cannot be a Minor Modification since significant changes are being proposed pursuant to rule 02Q .0516 that would contravene or conflict with conditions in the existing permit. Under 02Q .0501, a significant modification that contravenes or conflicts with a condition in the existing permit, such as replacing the NSPS-based monitoring, recordkeeping and reporting requirements with the MATS-based requirements as Duke proposes, must be processed under 02Q .0501(d)(1) with a 45-day public notice, or processed under 02Q .0501(d)(2). The 02Q .0501(d)(2) process allows the permittee to obtain a 02Q .0300 construction and operation permit under 02Q .0504 and, before beginning operation, the permittee must file an application and obtain a Title V permit. This allows the

permittee to proceed with any construction until the Title V permit is obtained. However, in this case, there is no advantage to using the 02Q .0501(d)(2) process since no construction is involved and operation is not allowed until the Title V permit is issued. Therefore, the one-step 02Q .0501(d)(1) process is being used with public notice at this time.

## II. Permit Changes

The following changes were made to the Progress Energy - Roxboro Plant Air Permit No. 01001T51:

New Page	New Section	Old Page	Old Section	Description of Changes
Cover				Amended to reflect current permit number, issue date, effective date, and associated application information.
3-4	Section 1, table of permitted emission sources	3	Section 1, table of permitted emission sources	Added note for Units 1-4 (ES-Unit 1, ES-Unit 2, ES-Unit 3A, ES-Unit 3B, ES Unit 4A and ES-Unit 4B) that none of the mercury control devices or techniques shall use halogen containing compounds (for example, bromide).
9-10	Section 2.1.A, regulation table	9-10	Section 2.1.A, regulation table	Changed 02D .0536 particulate matter limits for PM CEMS to 0.030 pounds per million Btu heat input (or 0.30 pounds per MWh).
				Removed 15A NCAC 02D .2500.
				Changed section reference for MACT Subpart UUUUU from Section 2.1.A.9 to Section 2.2.B.2.
13	Section 2.1.A.3.c	12-13	Section 2.1.A.3.c	Removed requirement to conduct Method 9 performance tests.
13	Section 2.1.A.3.d	13	Section 2.1.A.3.d	Removed requirement to report the results of Method 9 performance tests.
13	Section 2.1.A.5.a	13	Section 2.1.A.5.a	Added that the particulate matter limits are <u>as determined by stack test</u> , for clarity.
13	Section 2.1.A.5.d	13	Section 2.1.A.5.d	Revised to allow the use of MATS Method 5 to demonstrate compliance with the 02D .0536 stack test requirement.
13-14	Section 2.1.A.5.e	13-14	Section 2.1.A.5.e	Revised monitoring/recordkeeping based on MATS requirements.
14	Section 2.1.A.5.f	14	Section 2.1.A.5.f	Revised reporting based on MATS requirements.
--	--	15	Section 2.1.A.6.c	Removed this section for periods of less than 365 days of operation of the PM CEMS.
15	Section 2.1.A.7.a	15-16	Section 2.1.A.7.a	Revised to indicate that the use of PM CEMS, in accordance with the applicable MACT standards in §63.10010(i) of 40 CFR Part 63 Subpart UUUUU, is an alternative monitoring and recordkeeping procedure, as allowed by Paragraph 3.9 of Appendix P of 40 CFR Part 51.
				Revised to remove PM mg/m <sup>3</sup> concentrations corresponding to 0.030 pounds per million Btu heat input and revised monitor downtime to correct previous permit.
16	Section 2.1.A.7.b	16	Section 2.1.A.7.b	Added second, third and last sentences to correct previous omissions.

New Page	New Section	Old Page	Old Section	Description of Changes
16	Section 2.1.A.7.c	16	Section 2.1.A.7.c	Added last sentence to correct previous omission.
16	Section 2.1.A.7.c.i	16	Section 2.1.A.7.c.i	Revised to remove PM mg/m <sup>3</sup> concentrations corresponding to 0.030 pounds per million Btu heat input and added second sentence to update condition.
--	--	16	Section 2.1.A.8	Removed this condition since 15A NCAC 02D .2500 MERCURY RULES FOR ELECTRIC GENERATORS has expired.
--	--	17	Section 2.1.A.9	Removed this old placeholder condition for MACT Subpart UUUUU and added new MACT Subpart UUUUU condition in Section 2.2.C.2.
17	Section 2.1.B, regulation table	18	Section 2.1.B, regulation table	Changed 15A NCAC 02D .0524 particulate matter limit from 0.10 to 0.03 pound per million Btu heat input.
				Removed 15A NCAC 02D .0524 visible emissions limit.
				Removed 15A NCAC 02D .2500.
				Changed section reference for MACT Subpart UUUUU from Section 2.1.B.4 to Section 2.2.B.2.
17	Section 2.1.B.1.b	18	Section 2.1.B.1.b	Revised particulate limit from 0.10 to 0.03 and removed opacity limit.
18	Section 2.1.B.1.e	19	Section 2.1.B.1.e	Revised to allow the use of MATS Method 5 to demonstrate compliance with the 02D .0536 stack test requirement.
--	--	19	Section 2.1.B.1.h	Removed Method 9 test requirement.
18	Section 2.1.B.1.h.i	19	Section 2.1.B.1.i.i	Added second sentence.
--	--	20	Section 2.1.B.1.i.vii	Removed Method 9 test recordkeeping requirement.
19	Section 2.1.B.1.i.	20	Section 2.1.B.1.j	Removed Method 9 test reporting requirement.
--	--	21	Section 2.1.B.3	Removed this condition since 15A NCAC 02D .2500 MERCURY RULES FOR ELECTRIC GENERATORS has expired.
--	--	21	Section 2.1.B.4	Removed this old placeholder condition for MACT Subpart UUUUU and added new MACT Subpart UUUUU condition in Section 2.2.C.2.
22	Section 2.1.C.2.c	24	Section 2.1.C.2.c	Added that the Permittee shall establish "normal" for the sources added in the dry flyash permit T51 within 30 days of commencement of operation of new or modified equipment or within 30 days of permit issuance for any sources that commenced operation prior to issuance of permit T52, which was inadvertently omitted when that permit was issued.
25	Section 2.1.D.2.c	27	Section 2.1.D.2.c	
52-58	Section 2.2.B.2	--	--	Added new MACT Subpart UUUUU condition.
61-69	Section 3.0	57-65	Section 3.0	Updated general conditions to version 5.1, 08/03/2017.

### III. Facility Description

Duke Energy's Roxboro Plant is the second-largest coal-fired electrical generating facility in North Carolina (based on MW output). The facility produces steam in four coal-fired combustion units (Units 1-4) and one No. 2 fuel oil-fired combustion turbine. The steam from the combustion units is routed to steam turbines that produce electricity to sell to residential or industrial consumers. The coal-fired units are permitted to operate electrostatic precipitators for particulate emissions control, low-NO<sub>x</sub> burner systems combined with selective catalytic reduction (SCR) systems for nitrogen oxides (NO<sub>x</sub>) emissions control, and wet limestone scrubbers for sulfur dioxide (SO<sub>2</sub>) control. Wet scrubbers have been installed and are in operation on all four units (the last scrubber to start-up was on Unit 1 in the fall of 2008). The SCR systems are used on an as needed basis during ozone season to control NO<sub>x</sub> emissions. The facility has a total of six coal/recycled No. 2 fuel oil-fired electric utility boilers (Units 3 and 4 have two boilers each); flyash conveyance, handling and storage equipment; coal conveyance and storage equipment; limestone conveyance and storage equipment associated with the Units 1-4 scrubbers; and dry sorbent (limestone) injection systems to control corrosion in the flue gas ducts, reduce PM emissions and reduce limestone consumed in the scrubbers.

### IV. Summary of Changes to Emission Sources and Control Devices

Added note in the Section 1 table of permitted emission sources control device description for each Units 1-4 (ES-Unit 1, ES-Unit 2, ES-Unit 3A, ES-Unit 3B, ES Unit 4A and ES-Unit 4B) that none of the mercury control devices or techniques shall use halogen containing compounds (for example, bromide).

### V. Emission and Regulatory Evaluation

#### A. Incorporation of MATS Rule Requirements into the Permit

Subpart UUUUU MACT, "National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units" (MATS rule) applies to any coal-fired EGU or an oil-fired EGU as defined in §63.10042 of this subpart as specified in §63.9981. Certain types of electric steam generating units are not subject to the rule as listed in §63.9983. The current version of this rule was published in 81 FR 20192, Apr. 6, 2016.

The Roxboro units burn coal and they each meet the definition of a coal-fired electric utility steam generating unit as defined in §63.10042 as:

*Coal-fired electric utility steam generating unit* means an electric utility steam generating unit meeting the definition of "fossil fuel-fired" that burns coal for more than 10.0 percent of the average annual heat input during the 3 previous calendar years after the compliance date for your facility in §63.9984 or for more than 15.0 percent of the annual heat input during any one of those calendar years.

Where an electric utility steam generating unit is defined in §63.10042 of the rule as:

*Electric utility steam generating unit (EGU)* means a fossil fuel-fired combustion unit of more than 25 megawatts electric (MWe) that serves a generator that produces electricity for sale. A fossil fuel-fired unit that cogenerates steam and electricity and supplies more than one-third of its potential electric output capacity and more than 25 MWe output to any utility power distribution system for sale is considered an electric utility steam generating unit.

The Roxboro units are existing EGUs under the MATS rule since they did not commence construction or reconstruction after May 3, 2011 (§63.9982(d)). An existing EGU must comply with the MATS rule no later than April 16, 2015 (§63.9984(b)). Duke requested a one-year extension of the compliance date for the MATS work practice standards applicable to startup and shutdown, as allowed by the rule, in a letter dated December 16, 2014, for the Roxboro, Mayo, Belews Creek, Cliffside, Allen and Marshall Stations. NC DAQ approved the request extending the compliance date until April 16, 2016, in a letter to Mr. Larry Hatcher (Vice President, Environmental) from Lee Daniel dated January 16, 2015.

There are two subcategories of EGUs per §63.9990 as defined in §63.10042:

- (1) EGUs designed for coal with a heating value greater than or equal to 8,300 Btu/lb, and
- (2) EGUs designed for low rank virgin coal.

The Roxboro EGUs burn coal with a heating value greater than 8,300 Btu/lb. The requirements are different depending on which subcategory applies.

**Emission Limitations and Work Practice Standards**

As a coal-fired unit that is not designed for low rank virgin coal, the emission limit options for the Roxboro EGUs are shown below in accordance with Table 2 to Subpart UUUUU.

**Table 2 to Subpart UUUUU of Part 63—Emission Limits for Existing EGUs**

As stated in §63.9991, you must comply with the following applicable emission limits:<sup>1</sup>

If your EGU is in this subcategory . . .	For the following pollutants . . .	You must meet the following emission limits and work practice standards . . .	Using these requirements, as appropriate ( <i>e.g.</i> , specified sampling volume or test run duration) and limitations with the test methods in Table 5 to this Subpart . . .
1. Coal-fired unit not low rank virgin coal	a. Filterable particulate matter (PM)	3.0E-2 lb/MMBtu or 3.0E-1 lb/MWh <sup>2</sup>	Collect a minimum of 1 dscm per run.
	OR		
	Total non-Hg HAP metals	5.0E-5 lb/MMBtu or 5.0E-1 lb/GWh	Collect a minimum of 1 dscm per run.
	OR		
	Individual HAP metals:		Collect a minimum of 3 dscm per run.
	Antimony (Sb)	8.0E-1 lb/TBtu <sup>3</sup> or 8.0E-3 lb/GWh	
	Arsenic (As)	1.1E0 lb/TBtu or 2.0E-2 lb/GWh	
	Beryllium (Be)	2.0E-1 lb/TBtu or 2.0E-3 lb/GWh	
	Cadmium (Cd)	3.0E-1 lb/TBtu or 3.0E-3 lb/GWh	
	Chromium (Cr)	2.8E0 lb/TBtu or 3.0E-2 lb/GWh	
	Cobalt (Co)	8.0E-1 lb/TBtu or 8.0E-3 lb/GWh	
	Lead (Pb)	1.2E0 lb/TBtu or 2.0E-2 lb/GWh	
	Manganese (Mn)	4.0E0 lb/TBtu or 5.0E-2 lb/GWh	
	Nickel (Ni)	3.5E0 lb/TBtu or 4.0E-2 lb/GWh	

	Selenium (Se)	5.0E0 lb/TBtu or 6.0E-2 lb/GWh	
	b. Hydrogen chloride (HCl)	2.0E-3 lb/MMBtu or 2.0E-2 lb/MWh	For Method 26A at appendix A-8 to part 60 of this chapter, collect a minimum of 0.75 dscm per run; for Method 26, collect a minimum of 120 liters per run. For ASTM D6348-03 <sup>3</sup> or Method 320 at appendix A to part 63 of this chapter, sample for a minimum of 1 hour.
	OR		
	Sulfur dioxide (SO <sub>2</sub> ) <sup>5</sup>	2.0E-1 lb/MMBtu or 1.5E0 lb/MWh	SO <sub>2</sub> CEMS.
	c. Mercury (Hg)	1.2E0 lb/TBtu or 1.3E-2 lb/GWh	LEE Testing for 30 days with a sampling period consistent with that given in section 5.2.1 of appendix A to this subpart per Method 30B at appendix A-8 to part 60 of this chapter run or Hg CEMS or sorbent trap monitoring system only.
	OR		
		1.0E0 lb/TBtu or 1.1E-2 lb/GWh	LEE Testing for 90 days with a sampling period consistent with that given in section 5.2.1 of appendix A to this subpart per Method 30B run or Hg CEMS or sorbent trap monitoring system only.

<sup>1</sup>For LEE emissions testing for total PM, total HAP metals, individual HAP metals, HCl, and HF, the required minimum sampling volume must be increased nominally by a factor of two.

<sup>2</sup>Gross output.

<sup>3</sup>Trillion Btu

<sup>4</sup>Incorporated by reference, see §63.14.

<sup>5</sup>You may not use the alternate SO<sub>2</sub> limit if your EGU does not have some form of FGD system and SO<sub>2</sub> CEMS installed.

Roxboro has chosen to comply with MATS by limiting emission as follows:

- i. filterable particulate matter (PM) to 3.0E-2 lb/MMBtu or 3.0E-1 lb/MWh (using PM CEMS),
- ii. hydrogen chloride (HCl) to 2.0E-3 lb/MMBtu or 2.0E-2 lb/MWh (by demonstrating initial and continuous compliance by conducting an initial and periodic quarterly performance stack test for HCl), and
- iii. mercury (Hg) to 1.2E0 lb/TBtu or 1.3E-2 lb/GWh (using Hg CEMS and/or sorbent trap(s)).

As an alternative to meeting the requirements of §63.9991(a)(1) for filterable PM, SO<sub>2</sub>, HF, HCl, non-Hg HAP metals, or Hg on an EGU-specific basis as described above, the Permittee may choose to demonstrate compliance by using emissions averaging as described in §63.10009(a)(2) among existing EGUs in the same subcategory. If this option is selected for mercury, the Permittee shall limit the concentration of mercury to 1.0 lb/TBtu or 1.1E-2 lb/GWh. [§63.9991(a)(1), §63.10009 and §63.10022]

Roxboro has chosen to comply with paragraph (1) of the definition of “startup” in §63.10042. As an existing EGU with no neural network combustion optimization software and not firing syngas, the applicable requirements from Table 3 to Subpart UUUUU are as follows:

During periods of startup of an EGU:

- i. The Permittee has chosen to comply using the following work practice standards, by choosing to comply using paragraph (1) of the definition of “startup” in §63.10042, defined as follows.

*Startup means either the first-ever firing of fuel in a boiler for the purpose of producing electricity, or the firing of fuel in a boiler after a shutdown event for any purpose. Startup*

*ends when any of the steam from the boiler is used to generate electricity for sale over the grid or for any other purpose (including on site use). Any fraction of an hour in which startup occurs constitutes a full hour of startup.*

The Permittee shall operate all CMS during startup, except during periods of bypass of the main stack as provided in §63.10010(a)(4). For startup of a unit, clean fuels must be used as defined in §63.10042 for ignition. Once the unit converts to firing coal, the Permittee shall engage all of the applicable control technologies except the SCR. The Permittee shall start the SCR system appropriately to comply with relevant standards applicable during normal operation. The Permittee shall comply with all applicable emissions limits at all times except for periods that meet the applicable definitions of startup and shutdown in Subpart UUUUU. The Permittee shall keep records during startup periods.

- ii. If the Permittee chooses to use just one set of sorbent traps to demonstrate compliance with the applicable Hg emission limit, the Permittee shall comply with the limit at all times; otherwise, the Permittee shall comply with the applicable emission limit at all times except for startup and shutdown periods.
- iii. The Permittee shall collect monitoring data during startup periods, as specified in §63.10020(a) and (e). The Permittee shall keep records during startup periods, as provided in §§63.10032 and 63.10021(h). The Permittee shall provide reports concerning activities and startup periods, as specified in §63.10011(g) and §63.10021(h) and (i). All periods of bypass of the main stack shall be reported as deviations as provided in §63.10010(a)(4)(ii).  
[§63.9991(a)(1) and Table 3 to Subpart UUUUU]

During periods of shutdown of an EGU:

*Shutdown means the period in which cessation of operation of an EGU is initiated for any purpose. Shutdown begins when the EGU no longer generates electricity or makes useful thermal energy (such as heat or steam) for industrial, commercial, heating, or cooling purposes or when no coal, liquid oil, syngas, or solid oil-derived fuel is being fired in the EGU, whichever is earlier. Shutdown ends when the EGU no longer generates electricity or makes useful thermal energy (such as steam or heat) for industrial, commercial, heating, or cooling purposes, and no fuel is being fired in the EGU. Any fraction of an hour in which shutdown occurs constitutes a full hour of shutdown.*

- i. The Permittee shall operate all CMS during shutdown, except during periods of bypass of the main stack as provided in §63.10010(a)(4). The Permittee shall also collect appropriate data, and shall calculate the pollutant emission rate for each hour of shutdown for those pollutants for which a CMS is used. While firing coal during shutdown, the Permittee shall vent emissions to the main stack(s) and operate all applicable control devices and continue to operate those control devices after the cessation of coal being fed into the EGU and for as long as possible thereafter considering operational and safety concerns as provided for bypass of the main stack in §63.10010(a)(4). In any case, the permittee shall operate the controls when necessary to comply with other standards made applicable to the EGU by a permit limit or a rule other than Subpart UUUUU and that require operation of the control devices. All periods of bypass of the main stack shall be reported as deviations as provided in §63.10010(a)(4)(ii).
- ii. If, in addition to the fuel used prior to initiation of shutdown, another fuel must be used to support the shutdown process, that additional fuel shall be one or a combination of the clean fuels defined in §63.10042 and shall be used to the maximum extent possible taking into account considerations such as not compromising boiler or control device integrity.
- iii. The Permittee shall comply with all applicable emission limits at all times except during startup periods and shutdown periods at which time the Permittee shall meet the work practice standards. The Permittee shall collect monitoring data during shutdown periods, as specified in §63.10020(a). The Permittee shall keep records during shutdown periods, as provided in §§63.10032 and 63.10021(h). The Permittee shall provide reports concerning activities and shutdown periods, as specified in §§63.10011(g), 63.10021(i), and 63.10031.  
[§63.9991(a)(1), §63.10042, and Table 3 to Subpart UUUUU]



### **General Compliance Requirements**

The Permittee shall comply with the General Provisions as applicable pursuant to Table 9 to Subpart UUUUU. [§63.10040]

The Permittee shall be in compliance with the emission limits and operating limits in Subpart UUUUU. These limits shall apply at all times except during periods of startup and shutdown; however, for coal-fired EGUs, the Permittee shall be required to meet the work practice requirements in Table 3 to Subpart UUUUU during periods of startup or shutdown. [§63.10000(a)]

At all times, the Permittee shall operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the EPA Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [§63.10000(b)]

For coal-fired units, initial performance testing is required for all pollutants for the affected EGUs to demonstrate compliance with the applicable emission limits. [§63.10000(c)(1)]

The Permittee shall demonstrate compliance with the filterable particulate matter (PM) emission limit through an initial performance test and shall monitor continuous performance through use of a PM continuous emissions monitoring system (PM CEMS). [§63.10000(c)(1)(iv)]

The Permittee shall demonstrate initial and continuous compliance by conducting an initial and periodic quarterly performance stack test for HCl. [§63.10000(c)(1)(v)]

The Permittee shall demonstrate initial and continuous compliance through use of a Hg CEMS or a sorbent trap monitoring system in accordance with Appendix A to the Subpart. [§63.10000(c)(1)(vi)]

As part of demonstration of continuous compliance, the Permittee shall perform periodic tune-ups of the affected EGUs, according to §63.10021(e). [§63.10000(e)]

On or before the date an EGU is subject to Subpart UUUUU, the Permittee shall install, certify, operate, maintain, and quality-assure each monitoring system necessary for demonstrating compliance with the work practice standards for PM during startup periods and shutdown periods. The Permittee shall collect, record, report, and maintain data obtained from these monitoring systems during startup periods and shutdown periods. [§63.10000(l)]

### **Continuous Compliance Requirements**

The Permittee shall monitor and collect data according to §63.10020. [§63.10020(a)]

The Permittee shall operate the monitoring system and collect data at all required intervals at all times that the affected EGU is operating, except for periods of monitoring system malfunctions or out-of-control periods (see §63.8(c)(7)), and required monitoring system quality assurance or quality control activities, including, as applicable, calibration checks and required zero and span adjustments. The Permittee is required to affect monitoring system repairs in response to monitoring system malfunctions and to return the monitoring system to operation as expeditiously as practicable. [§63.10020(b)]

Except for periods of monitoring system malfunctions or monitoring system out-of-control periods, repairs associated with monitoring system malfunctions or monitoring system out-of-control periods, and required monitoring system quality assurance or quality control activities including, as applicable, calibration checks and required zero and span adjustments, failure to collect required data is a deviation from the monitoring requirements. [§63.10020(d)]

The Permittee shall demonstrate continuous compliance with each emissions limit, operating limit, and work practice standard in Tables 2 and 3 to Subpart UUUUU that applies to the affected EGU, according to

the monitoring specified in Table 7 to Subpart UUUUU and paragraphs (b) through (g) of §63.10021(a). [§63.10021(a)]

Except as otherwise provided in §63.10020(c), if the Permittee uses a CEMS to measure SO<sub>2</sub>, PM, HCl, HF, or Hg emissions, or uses a sorbent trap monitoring system to measure Hg emissions, the Permittee shall demonstrate continuous compliance by using all quality-assured hourly data recorded by the CEMS (or sorbent trap monitoring system) and the other required monitoring systems (e.g., flow rate, CO<sub>2</sub>, O<sub>2</sub>, or moisture systems) to calculate the arithmetic average emissions rate in units of the standard on a continuous 30-boiler operating day (or, if alternate emissions averaging is used for Hg, 90-boiler operating day) rolling average basis, updated at the end of each new boiler operating day. The Permittee shall use Equation 8 to Subpart UUUUU to determine the 30- (or, if applicable, 90-) boiler operating day rolling average.

$$\text{Boiler operating day average} = \frac{\sum_{i=1}^n Her_i}{n} \quad (\text{Eq. 8})$$

Where:

Her<sub>i</sub> is the hourly emissions rate for hour i and n is the number of hourly emissions rate values collected over 30- (or, if applicable, 90-) boiler operating days.

[§63.10021(b)]

Conduct periodic performance tune-ups of the EGUs, as specified in paragraphs (e)(1) through (9) of §63.10021. For the first tune-up, the Permittee may perform the burner inspection any time prior to the tune-up or delay the first burner inspection until the next scheduled EGU outage provided the requirements of §63.10005 are met. Subsequently, the Permittee shall perform an inspection of the burner at least once every 36 calendar months unless the EGU employs neural network combustion optimization during normal operations in which case an inspection of the burner and combustion controls shall be performed at least once every 48 calendar months. If the EGU is offline when a deadline to perform the tune-up passes, the tune-up work practice requirements shall be performed within 30 days after the re-start of the affected unit. [§63.10021(e)]

The Permittee shall follow the startup or shutdown requirements as given in Table 3 to the Subpart for each coal-fired EGU and comply with all applicable requirements in §63.10011(g). [§§63.10005(j), 63.10011(g) and §63.10021(h)]

If the Permittee elects to average emissions consistent with §63.10009 for any constituent, following the compliance date, the Permittee must demonstrate compliance on a continuous basis by meeting the requirements of paragraphs (a)(1) through (4) of §63.10022. Any instance where the Permittee fails to comply with the continuous monitoring requirements in paragraphs (a)(1) through (3) of §63.10022 is a deviation. [§63.10022]

The Permittee shall determine the fuel whose combustion produces the least uncontrolled emissions, taking safety considerations into account, *i.e.*, the cleanest fuel, either natural gas or distillate oil, that is available on site or accessible nearby for use during periods of startup or shutdown. The cleanest fuel, either natural gas or distillate oil, for use during periods of startup or shutdown determination may take safety considerations into account. [§§63.10011(f)(1) and (2)]

### **Monitoring**

For an affected unit that exhausts to the atmosphere through a single, dedicated stack, the Permittee shall either install the required CEMS and sorbent trap monitoring systems in the stack or at a location in the ductwork downstream of all emissions control devices, where the pollutant and diluents concentrations are representative of the emissions that exit to the atmosphere. [§63.10010(a)(1)]

If the Permittee uses an oxygen (O<sub>2</sub>) or carbon dioxide (CO<sub>2</sub>) CEMS to convert measured pollutant concentrations to the units of the applicable emissions limit, the O<sub>2</sub> or CO<sub>2</sub> concentrations shall be monitored at a location that represents emissions to the atmosphere, *i.e.*, at the outlet of the EGU, downstream of all emission control devices. The Permittee shall install, certify, maintain, and operate the

CEMS according to 40 CFR Part 75. Use only quality-assured O<sub>2</sub> or CO<sub>2</sub> data in the emissions calculations; do not use Part 75 substitute data values. [§63.10010(b)]

If the Permittee is required to use a stack gas flow rate monitor, either for routine operation of a sorbent trap monitoring system or to convert pollutant concentrations to units of an electrical output-based emission standard in Table 2 to Subpart UUUUU, the Permittee shall install, certify, operate, and maintain the monitoring system and conduct on-going quality-assurance testing of the system according to 40 CFR Part 75. Use only unadjusted, quality-assured flow rate data in the emissions calculations. Do not apply bias adjustment factors to the flow rate data and do not use substitute flow rate data in the calculations. [§63.10010(c)]

If the Permittee is required to make corrections for stack gas moisture content when converting pollutant concentrations to the units of an emission standard in Table 2 to Subpart UUUUU, the Permittee shall install, certify, operate, and maintain a moisture monitoring system in accordance with 40 CFR Part 75. Alternatively, for coal-fired units, the Permittee may use appropriate fuel-specific default moisture values from §75.11(b) to estimate the moisture content of the stack gas. If the Permittee installs and operates a moisture monitoring system, the Permittee shall not use substitute moisture data in the emissions calculations. [§63.10010(d)]

The Permittee shall conduct all applicable periodic HCl emissions tests according to Table 5 to Subpart UUUUU and §63.10007 at least quarterly, except as otherwise provided in §63.10021(d)(1). [§63.10006(d)]

The Permittee shall use a Hg CEMS or a sorbent trap monitoring system, the Permittee shall install, certify, operate, maintain and quality-assure the data from the monitoring system in accordance with Appendix A to Subpart UUUUU and as specified in §63.10010(g). [§63.10010(g)]

The Permittee shall install, certify, operate, and maintain a PM CEMS and record the output of the PM CEMS as specified in paragraphs (i)(1) through (5) of §63.10010 (shown below). The compliance limit shall be expressed as a 30-boiler operating day rolling average of the applicable numerical emissions limit value in Table 2 to Subpart UUUUU. [§63.10010(i)]

- i. Install and certify the PM CEMS according to the procedures and requirements in Performance Specification 11—Specifications and Test Procedures for Particulate Matter Continuous Emission Monitoring Systems at Stationary Sources in Appendix B to part 60 of this chapter, using Method 5 at Appendix A-3 to part 60 of this chapter and ensuring that the front half filter temperature shall be 160° ±14 °C (320° ±25 °F). The reportable measurement output from the PM CEMS must be expressed in units of the applicable emissions limit (e.g., lb/MMBtu, lb/MWh).
- ii. Operate and maintain the PM CEMS according to the procedures and requirements in Procedure 2—Quality Assurance Requirements for Particulate Matter Continuous Emission Monitoring Systems at Stationary Sources in Appendix F to part 60 of this chapter.
  - (A) Conduct the relative response audit (RRA) for the PM CEMS at least once annually.
  - (B) Conduct the relative correlation audit (RCA) for the PM CEMS at least once every 3 years.
- iii. Collect PM CEMS hourly average output data for all boiler operating hours except as indicated in §63.10010(i).
- iv. Calculate the arithmetic 30-boiler operating day rolling average of all of the hourly average PM CEMS output data collected during all nonexempt boiler operating hours.
- v. Collect data using the PM CEMS at all times the process unit is operating and at the intervals specified in §63.10010(a), except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities.
  - (A) Use all the data collected during all boiler operating hours in assessing the compliance with the operating limit except:
    - (I) Any data collected during periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, or required monitoring system quality assurance or quality control activities that temporarily interrupt the measurement of emissions (e.g., calibrations,

certain audits). Report any monitoring system malfunctions or out of control periods in the annual deviation reports. Report any monitoring system quality assurance or quality control activities per the requirements of §63.10031(b);

(II) Any data collected during periods when the monitoring system is out of control as specified in the site-specific monitoring plan, repairs associated with periods when the monitoring system is out of control, or required monitoring system quality assurance or quality control activities conducted during out-of-control periods. Report any such periods in the annual deviation report;

(III) Any data recorded during periods of startup or shutdown.

(B) Record and make available upon request results of PM CEMS system performance audits, dates and duration of periods when the PM CEMS is out of control to completion of the corrective actions necessary to return the PM CEMS to operation consistent with the site-specific monitoring plan.

### **Recordkeeping**

The Permittee shall keep records of the following:

- i. Records required under appendix A and/or appendix B to Subpart UUUUU for continuous monitoring of Hg emissions.
- ii. Each notification and report that is submitted to comply with Subpart UUUUU, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report that was submitted, according to the requirements in §63.10(b)(2)(xiv).
- iii. Records of performance stack tests, fuel analyses, or other compliance demonstrations and performance evaluations, as required in §63.10(b)(2)(viii). [§63.10032(a)]

For each CEMS, the Permittee shall keep records as follows:

- i. Records described in §63.10(b)(2)(vi) through (xi).
- ii. Previous (i.e., superseded) versions of the performance evaluation plan as required in §63.8(d)(3).
- iii. Request for alternatives to relative accuracy test for CEMS as required in §63.8(f)(6)(i).
- iv. Records of the date and time that each deviation started and stopped, and whether the deviation occurred during a period of startup, shutdown, or malfunction or during another period. [§63.10032(b)]

For each EGU subject to an emission limit, the Permittee shall keep records of monthly fuel use by each EGU, including the type(s) of fuel and amount(s) used. [§63.10032(d)(1)]

If the Permittee elects to average emissions consistent with §63.10009 for any constituent, the Permittee must additionally keep a copy of the emissions averaging implementation plan required in §63.10009(f) and(j), all calculations required under §63.10009, including daily records of heat input or steam generation, as applicable, and monitoring records consistent with §63.10022. [§63.10032(e)]

If the Permittee chooses to rely on paragraph (1) of the definition of “startup” in §63.10042 for any EGU, records must be kept of the occurrence and duration of each startup or shutdown. [§63.10032(f)(1)]

The Permittee shall keep records of the occurrence and duration of each malfunction of an operation (i.e., process equipment) or the air pollution control and monitoring equipment. [§63.10032(g)]

The Permittee shall keep records of actions taken during periods of malfunction to minimize emissions in accordance with §63.10000(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation. [§63.10032(h)]

The Permittee shall keep records of the type(s) and amount(s) of fuel used during each startup or shutdown. [§63.10032(i)]

The Permittee shall keep records in a form suitable and readily available for expeditious review, according to §63.10(b)(1). The Permittee shall keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The Permittee shall keep each record on site for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action,

report, or record. The Permittee can keep the records off site for the remaining 3 years. [§63.10033(a) through (c)]

### **Reporting**

The Permittee shall submit a Notification of Compliance Status summarizing the results of initial compliance demonstration in §63.10030(e). When the Permittee is required to conduct an initial compliance demonstration as specified in §63.10011(a), the Permittee shall submit a Notification of Compliance Status according to §63.9(h)(2)(ii). The Notification of Compliance Status report shall contain all the information specified in paragraphs (e)(1) through (8) of §63.10030, as applicable. [§§63.10005(k), 63.10011(e), and 63.10030(e)]

The Permittee shall submit the reports required under §63.10031 and, if applicable, the reports required under appendices A and B to the Subpart. The electronic reports required by appendices A and B to the Subpart shall be sent to the Administrator electronically in a format prescribed by the Administrator, as provided in §63.10031. CEMS data (except for PM CEMS and any approved alternative monitoring using a HAP metals CEMS) shall be submitted using EPA's Emissions Collection and Monitoring Plan System (ECMPS) Client Tool. Other data, including PM CEMS data, HAP metals CEMS data, and CEMS performance test detail reports, shall be submitted in the file format generated through use of EPA's Electronic Reporting Tool, the Compliance and Emissions Data Reporting Interface, or alternate electronic file format, all as provided for under §63.10031. [§63.10021(f)]

The Permittee shall report each instance in which the Permittee did not meet an applicable emissions limit or operating limit in Tables 1 through 4 to 40 CFR 63 Subpart UUUUU or failed to conduct a required tune-up. These instances are deemed violations from the requirements of 40 CFR 63 Subpart UUUUU and shall be reported according to §63.10031. [§63.10021(g)]

The Permittee shall submit all of the notifications in §§63.7(b) and (c), 63.8 (e), (f)(4) and (6), and 63.9 (b) through (h), as applicable, by the dates specified. [§63.10030(a)]

When the Permittee is required to conduct a performance test, the Permittee shall submit a Notification of Intent to conduct a performance test at least 30 days before the performance test is scheduled to begin. [§63.10030(d)]

The Permittee shall submit each report in Table 8 to 40 CFR 63 Subpart UUUUU, as applicable. [§63.10031(a)]

The NC DAQ has approved a different schedule for submission of reports under §63.10(a) than the date in Table 8 of Subpart UUUUU. The Permittee shall submit excess emissions and monitoring system performance reports for PM in accordance with the reporting requirements given in Section 2.1.A.7.d no later than January 30 of each calendar year for the preceding three-month period between October and December, April 30 of each calendar year for the preceding three-month period between January and March, July 30 of each calendar year for the preceding three-month period between April and June, and October 30 of each calendar year for the preceding three-month period between July and September. [§63.10031(b)]

The compliance report shall contain the following:

- i. The information required by the summary report located in 63.10(e)(3)(vi).
- ii. The total fuel use by each affected source subject to an emission limit, for each calendar month within the semiannual reporting period, including, but not limited to, a description of the fuel, whether the fuel has received a non-waste determination by EPA or the basis for concluding that the fuel is not a waste, and the total fuel usage amount with units of measure.
- iii. Indicate whether the Permittee burned new types of fuel during the reporting period. If the Permittee did burn new types of fuel the Permittee must include the date of the performance test where that fuel was in use.
- iv. Include the date of the most recent tune-up for each EGU. The date of the tune-up is the date the tune-up provisions specified in §63.10021(e)(6) and (7) were completed.

- iv. A certification.
- v. If there is a deviation from any emission limit, work practice standard, or operating limit, the Permittee must also submit a brief description of the deviation, the duration of the deviation, emissions point identification, and the cause of the deviation.
- vi. For each excess emissions occurring at an affected source where the Permittee is using a CMS to comply with that emission limit or operating limit, the Permittee shall include the information required in §63.10(e)(3)(v) in the compliance report specified in §63.10031(c). [§63.10031(c) and §63.10031(d)]

Each affected source that has obtained a Title V operating permit pursuant to 40 CFR Part 70 or Part 71 shall report all deviations as defined in this subpart in the semiannual monitoring report required by 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A). If an affected source submits a compliance report pursuant to Table 8 of Subpart UUUUU along with, or as part of, the semiannual monitoring report required by 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), and the compliance report includes all required information concerning deviations from any emission limit, operating limit, or work practice requirement in this subpart, submission of the compliance report satisfies any obligation to report the same deviations in the semiannual monitoring report. Submission of a compliance report does not otherwise affect any obligation the affected source may have to report deviations from permit requirements to the permit authority. [§63.10031(e)]

On or after July 1, 2018, within 60 days after the date of completing each performance test, the Permittee shall submit the performance test reports required by the Subpart to EPA's WebFIRE database by using the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) ([www.epa.gov/cdx](http://www.epa.gov/cdx)). The Permittee shall comply with all applicable requirements in §63.10031(f). [§63.10031(f)]

If the Permittee had a malfunction during the reporting period, the compliance report must include the number, duration, and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. [§63.10031(g)]

## **B. Revisions to PM CEMS Conditions – Units 1, 2 and 3**

Because these units are now subject to the MATS rule, Duke has requested the regulatory framework for the PM CEMS be based on the MATS rule requirements instead of based on using the NSPS rules as in the existing permit, in part to streamline and simplify the permit conditions by reducing overlapping requirements. An existing EGUs must comply with the MATS rule as of April 16, 2015.

Duke is requesting a change to the PM CEMS provisions in the permit for non-NSPS SIP Units 1, 2 and 3 to align the monitoring, recordkeeping and reporting conditions for compliance with rules 15A NCAC 02D .0521 (opacity in Section 2.1.A.3) and 02D .0536 (particulate in Section 2.1.A.5) based on the MATS rule as follows:

### **02D .0521 (opacity)**

The Method 9 performance test required by NSPS is no longer required at the much lower MATS rule PM limit of 0.030 pounds per million Btu heat input or 0.30 pounds per MWh, compared to the NSPS limit of 0.10 lb/mmBtu and has been removed from the 02D .0521 monitoring in Section 2.1.A.3.

### **02D .0536 (particulates)**

Compliance with the 02D .0536(b) particulate limit for Units 1, 2 and 3 will be changed from the limits in the rule (24-hour daily arithmetic average) to 0.030 pounds per million Btu heat input (30-boiler operating day rolling average) or 0.30 pounds per MWh (30-boiler operating day rolling average).

The PM CEMS requirements in 02D .0536 have been revised to be consistent with the MATS rule monitoring option using PM CEMS selected by Duke (one of three PM compliance options under MATS: either a particulate matter continuous parametric monitoring system (PM CPMS), a PM CEMS, or, for an existing EGU, compliance performance testing repeated quarterly) rather than the

previous NSPS-based requirements. The monitoring, recordkeeping and reporting under 02D .0536 has been revised to include and cross-reference the applicable MATS requirements in permit conditions 2.1.A.12.dd, ff and tt respectively.

**C. Use of MATS Method 5 to Comply with SIP (Units 1, 2 and 3) and NSPS Subpart D (Unit 4) PM Emission Limits for Stack Testing**

The Unit 1, 2 and 3 boilers are currently subject to using Method 5B (M5B) of Appendix A to 40 CFR 60 to demonstrate compliance with the PM stack test requirement in 02D .0536 in Section 2.1.A.5.d of the permit, and the Unit 4 boilers are also currently subject to using M5B to demonstrate compliance with the applicable PM standard in NSPS Subpart D in Section 2.1.B.1.e of the permit.

Duke has requested that the boilers be allowed to use the test methodology outlined in the MATS regulation to demonstrate compliance with the PM emission standards, thereby aligning the MATS test methodology with the current state regulations as stated in Section V.B above. The MATS test requires a modified EPA Reference Method 5 test (MATS M5) using an elevated sample temperature of  $320^{\circ} \pm 25^{\circ}$  F as described in §63.10010(i)(1) to correlate the PM CEMS and complete the ongoing QA/QC activities. Duke has supported their request with a letter of approval from EPA OAQPS (See March 3, 2015 letter from J. Todd Hawes, EPA OAQPS, to Alan Madewell, Duke Energy Progress.

EPA states that MATS M5 would be expected to provide a more conservative emission measurement (ie, slightly higher results) compared to Method 5B for the Unit 4 NSPS boilers. The stationary Source Compliance Branch (SSCB) has agreed with EPA's approval and also approved the use of MATS M5 for the Units 1-3 SIP boilers in a letter to Duke dated June 14, 2017.

The permit will allow either Method 5 at a sample temperature of  $320^{\circ} \pm 25^{\circ}$  F as described in §63.10010(i)(1) or Method 5B.

**D. Modification of 02D .0606 – Units 1, 2 and 3**

Duke amended the application in a letter dated May 19, 2017, to modify the method to be used as an indication of good operation and maintenance (Good O&M) for the PM CEMS in Section 2.1.A.7.a of the permit. As a result of discussions with DAQ, Duke petitioned to modify the method for determining Good O&M to directly use the 0.030 pounds per million Btu heat input rather than the concentration of PM emissions that corresponds to 0.030 pounds per million Btu heat input to demonstrate that the sources are deemed to be properly operated and maintained. SSCB approved the revised petition in a letter to Mr. Jason Haynes (Roxboro Responsible Official) from Donald R. van der Vaart dated June 14, 2017.

Since the use of PM CEMS is not covered by Appendix P (Appendix P only covers COMS, SO<sub>2</sub> and NO<sub>x</sub> CEMS), the alternative monitoring and recordkeeping procedure in Section 2.1.A.7.a applies as allowed by Paragraph 3.9 of Appendix P of 40 CFR Part 51. The Permittee shall install, certify, operate, and maintain a PM CEMS to monitor and record PM emissions according to the applicable Maximum Achievable Control Technology (MACT) standards in §63.10010(i) of 40 CFR Part 63 Subpart UUUUU, as specified in Section 2.2.B.2.dd of the permit.

The sources shall be deemed to be properly operated and maintained if the percentage of time the PM emissions, calculated on a one-hour average, greater than 0.030 pounds per million Btu heat input does not exceed 3.0 percent of the total operating time for any given calendar quarter (this limit is taken from SSCB's approval letter). In addition, the sources shall be deemed to be properly operated and maintained if the %MD does not exceed 2 percent for any given calendar quarter as calculated in Section 2.1.A.7.a of the permit. In accordance with the MATS rule at §63.10007(f)(1)(ii), the PM monitored value subject to the 0.030 pounds per million Btu limit may have a 5% CO<sub>2</sub> diluent cap, or a 14% O<sub>2</sub> diluent cap, substituted in the emission rate calculation for a startup or shutdown hour (as defined in §63.10042) in which the measured CO<sub>2</sub> concentration is below 5% or whenever the measured O<sub>2</sub> concentration is above 14%.

**E. NSPS PM Limit Change – Unit 4**

Duke amended the application in a letter dated May 19, 2017, to request a correction to change the Unit 4 NSPS Subpart D PM limit from 0.10 lb/mmBtu to 0.03 lb/mmBtu in Section 2.1.B.1.b of the permit.

NCDAQ had recently determined that there was an error in the PM emission limit that was originally permitted for the alternative PM CEMS monitoring option in permit T45 in August 31, 2009, and this was discussed with Duke prior to their request.

The PM limit was not changed to the then-current 0.03 lb/mmBtu limit, because of the following NSPS Subpart D changes around the time DAQ SSCB was reviewing and approving Progress' PM CEMS petition.

Progress' petition for the PM CEMS alternative monitoring, submitted on March 9, 2009, and DAQ's approval of the petition, was based on the language in §60.45(b)(5) which read as follows:

§60.45(b)(5) Emissions and fuel monitoring

*An owner or operator may petition the Administrator (in writing) to install a PM CEMS as an alternative to the CEMS for monitoring opacity emissions.*

However, shortly before the petition was approved, NSPS Subpart D had been revised, on January 28, 2009, to include paragraph §60.42(c) as follows, allowing an option to comply with the lower Subpart Da PM limit in §60.42Da(a) of 0.03 lb/mmBtu instead of the 0.10 lb/mmBtu limit of Subpart D in §60.42(a):

§60.42(c) Standard for particulate matter (PM)

*As an alternate to meeting the requirements of paragraph (a) of this section, an owner or operator that elects to install, calibrate, maintain, and operate a continuous emissions monitoring systems (CEMS) for measuring PM emissions can petition the Administrator (in writing) to comply with §60.42Da(a) of subpart Da of this part. If the Administrator grants the petition, the source will from then on (unless the unit is modified or reconstructed in the future) have to comply with the requirements in §60.42Da(a) of subpart Da of this part.*

The language in §60.45(b)(5) was removed in April 2012, over three years after the addition of 60.42(c) in January 2009. This meant that for over three years, during which time the PM CEMS petition and the subsequent permit was being issued on August 31, 2009, there were two different conflicting requirements in Subpart D: (1) §60.45(b)(5) in the monitoring section, which allowed an owner or operator using PM CEMS to petition to comply with the 0.10 lb/mmBtu limit in §60.42, and (2) §60.42(c) in the PM standard section, which allowed an owner or operator using PM CEMS to petition to comply with a Subpart Da limit of 0.03 lb/mmBtu.

The 0.03 lb/mmBtu limit in §60.42Da(a) is as follows:

§60.42Da Standards for particulate matter (PM)

*(a) Except as provided in paragraph (f) of this section, on and after the date on which the initial performance test is completed or required to be completed under §60.8, whichever date comes first, an owner or operator of an affected facility shall not cause to be discharged into the atmosphere from any affected facility for which construction, reconstruction, or modification commenced before March 1, 2005, any gases that contain PM in excess of 13 ng/J (0.03 lb/MMBtu) heat input.*

It does not appear that DAQ or Progress were aware of the addition of 60.42(c) since it occurred just about 40 days prior to DAQ's approval of the petition (this is discussed in Michael Pjetraj's email of June 24, 2016 to William Willets and Sheila Holman explaining SSCB's review of what led to the error in the PM limit).

For affected facilities using a PM CEMS, a COMS is not required and the facility is exempt from the opacity standard as long as they are complying with a the 0.030 lb/mmBtu limit as discussed in the FEDERAL REGISTER RULE Vol. 74, No. 17 January 28, 2009 pp. 5072-5093 as follows:

*We are also finalizing several clarifications to correct technical and editorial errors and to amend the monitoring requirements for owners and operators of affected facilities that elect to install particulate matter continuous emission monitoring systems (PM CEMS). Owners*



*and operators of affected facilities that install a PM CEMS will be exempt from the opacity standard as long as they are complying with a federally enforceable permit limiting PM emissions to 0.030 pounds per million British thermal units or less. In addition, owner and operators of affected facilities that elect to install PM CEMS will be required to measure and report emissions of condensable PM.*

*The opacity standard and all opacity monitoring requirements have been eliminated for owner/operators of affected facilities complying with a federally enforceable PM limit of 0.030 lb/MMBtu or less who voluntarily elect to use a PM CEMS to demonstrate continuous compliance with the PM limit.*

Therefore, the PM limit is being changed from 0.10 lb/mmBtu to 0.03 lb/mmBtu, and the opacity limit and associated monitoring, recordkeeping and reporting have been removed in various conditions in Section 2.1.B.1 of the permit. SSCB approved these changes in a letter to Mr. Jason Haynes (Roxboro Responsible Official) from Donald R. van der Vaart dated June 14, 2017.

## **VI. Public Notice**

Pursuant to 15A NCAC 02Q .0521, a notice of the draft Title V Operating Permit will be published on the DAQ website to provide for a 30-day comment period with an opportunity for a public hearing. Copies of the draft (proposed) permit, review and public notice will be sent to EPA for their 45-day review, to persons on the Title V mailing list, to the Raleigh Regional Office, and to the Permittee for review.

## **VII. Other Requirements**

### PE Seal

A PE seal is not required since this modification does not involve any of the criteria listed in 02Q .0112(b).

### Zoning

A consistency determination is not required pursuant to 02Q .0507(d)(1) since there is no expansion of the facility.

### Fee Classification

The facility fee classification before and after this modification will remain as "Title V".

### Increment Tracking

Person County has triggered increment tracking under PSD for PM-10 and SO<sub>2</sub>. However, this permit modification does not consume or expand increments for any pollutants.

## **VII. Comments on Draft Permit Prior to Public Notice**

The draft permit was sent to Erin Wallace at Duke on July 18, 2017 for review. On August 1, 2017, Duke provided comments in a "track changes" marked up copy of the permit. The following summarizes Dukes comments:

1. Correct typo in the review where to change "Cliffside" to "Roxboro."

### DAQ Response

This was changed.

2. Correct in review Section IV where it states halide salts was being added.

### DAQ Response

This was corrected as shown in Section IV to say that a note was added for each unit to stating none of the mercury control devices or techniques shall use halogen containing compounds (for example, bromide).

3. Revise in the review (three places) and permit (Sections 2.2.B.2.k and bb) to replace SO<sub>2</sub> CEMS with quarterly HCl stack testing.

DAQ Response

This was changed.

4. In the permit, add "... or within 30 days of permit issuance if operation commenced prior to the issuance of permit T52" for establishing normal for the 2D .0521 monitoring in Sections 2.1.C and D.

DAQ Response

This was changed.

5. Remove MATS condition 2.2.B.2.v in the permit for emissions averaging. Roxboro is not using emissions averaging.

DAQ Response

This was changed.

6. Duke requested, in Section 2.2.B.2.d.iii of the permit, for during periods of startup, if the condition can clarify that the requirement that all periods of bypass of the main stack shall be reported as deviations, only applies when there is fire in the boiler.

DAQ Response

No change was made. For consistency among different permits, DAQ is trying to keep, as much as possible, from having different language for the same condition. Allen, Marshall and Cliffside all have this language. Since "startup means ... firing of fuel in a boiler," it would seem clear that this is when there is fire in the boiler.

The draft permit was sent to Steven Carr at the Raleigh Regional Office on July 21, 2017 for review. No comments were received.

The draft permit was sent to Samir Parekh with SSCB on on July 21, 2017 for review. No comments were received.

## **IX. Recommendations**

After public notice.....